

Research Report on the LED industry of China and the World from 2009 to 2010

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Description

In the 1950s, RCA first found the infrared radiation of gallium arsenide in other semiconductor alloys. LED is a luminescence component made of semiconductor materials. The component has two electrode terminals. Voltage is applied between the terminals and electricity is switched on. And after the combination of electricity and hole, the remaining power is released in form of light. Different materials have different wavelengths and thus send out lights of various colors. This is the basic lighting theory of LED.

LED can only be applied in diodes that can send out visible light. The diodes that send out near-infrared radiation are called IRED. The diodes that can send out some ultraviolet radiation are called UVLED, and their emission peak wavelengths are near visible short wave length limits. But generally, the above-mentioned three semiconductor diodes are collectively called LED. According to their different encapsulations, they can be divided into Lamp LED, Display LED and SMD LED. LAMP and DISPLAY belong to the mature market and their growing space is limited.

According to their different constituents, LED wafers can be divided into binary wafers (GaP, GaAs), ternary wafers (GaAlP, GaAsP), quaternary wafers (InGaAlP) and chloride wafers (GaN). Chloride wafers mainly include blue-ray, pure green-ray and white-ray wafers. They have different materials and manufacturing procedures. That LED can be so highly valued is also because of GaN materials.

According to the manufacturing process, the LED industry can be divided into three stages: epitaxy or epiwater in the upper course, chip producing in the midstream and packing in the Downstream. There is also a manufacturer before the upper course, that is, the substrate manufacturer. It usually produces sapphire substrates. It also has carborundum substrates, which is the special esoterica of CREE. However, because it has a low output value and can be applied in RF, it is not really a member of the LED industry chain.

In the upper course, producers use single chips as substrates for epitaxy, and then employ different epitaxies (such as LPE, MOCVD and MBE) to foster multilayer and polynary thin film materials with different thicknesses. And in the midstream, according to the demands of LED structural components, producers first do evaporation and then make metal electrodes in both terminals of LED through photolithographic and heat treatment on epi wafers, and then cut them into LED crystal grains after wearing down substrates and polishing. In the Downstream, producers use packing techniques to pack crystal grains into LED products and pack them into different applicable products to be used in the applicable markets.

The global LED industries are mainly concentrated in Japan, EU and Taiwan. EU is mainly dependent on PHILIPS and OSRAM. Japan has Nichia, Toshiba, Showa Denko, Sharp, Citizen and Toyota Gosei. Only Nichia produces mainly LED. But even Nichia, it has a high rate of phosphor business. America has CREE. These areas have a very high industrial concentration of LED. The top 3 manufacturers account for over 80%, even 90% of the output values. The LED industry is comparatively scattered in Taiwan. But its top 3 manufacturers also account for nearly 40% of the output values.

Manufacturers in the mainland are most scattered and they are mainly concentrated in the Downstream. There are nearly 1,000 manufactures mainly doing the packing of LAMP with the lowest profits. Less than 5 manufacturers can do large-scale SMD packing and less than 10 manufacturers can produce large-scale outdoor LED displays. There are less than 10 manufacturers producing in the upper course and most of them produce low-end binary red/green LED. The main packing enterprises are Xiamen Hualian, Foshan Guoxing, Jiangsu Wenrun, Huizhou Huagang, Shenzhen Guangliangzi, Ningbo Hepu, Jiangxi Lianchuang, Tianjin Tianxing, Lanfang Xingu, Shenzhen Ruifeng, Shenzhen Ledman and Zhuhai Leedfull (Hongke)

There are almost 10 scaled LED producers in Chinese mainland, among which there are five listed companies dealing with LED-related business. Only in Saman, Newmargin and Silan LED business accounts for over 10%.

This report analyzes the global and Chinese LED industries in terms of concepts, patents, applications and LED manufacturers upstream and downstream. By reading this report, readers can achieve the following or more information:

- Development of the global and Chinese LED industries
- The operational status of the main LED enterprises in China and over the world
- Application of LED in cell phones
- Application of LED in TV
- Application of LED in vehicle lighting
- Application of LED in billboards
- Application of LED in common lighting
- Overview of the LED industry chain

It is recommended the following enterprises and persons to buy:

- Enterprises in the upstream of the LED industry chain which concern the development of those enterprises downstream and midstream
- Enterprises in the midstream of the LED industry chain which concern the development of those enterprises in the downstream and concern the market competition
- Enterprises in the downstream of the LED industry chain which concern the application status of the LED market
- Enterprises and persons which concern Chinese LED billboard industry since China has the largest LED billboard market in the world
- Consuming electronic enterprises in laptops, cell phones and LED TV
- Investors who concern the LED industry, because this report can help investors find investing opportunities

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